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# Aggressive Anal Squamous Cell Carcinoma with Vertebral and Cardiac Metastasis

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**Abstract** Anal squamous cell carcinoma (SCC) is a rare tumor of gastrointestinal tract. Incidence of anal SCC in the general population has increased lately due to changes in sexual practices, incidence of Human immunodeficiency virus (HIV) and Human papilloma virus (HPV). It is a loco-regional disease but can have distant metastasis if not treated early. We present a case of a 35 year old man with Acquired immunodeficiency syndrome (AIDS) who had a fatal outcome from aggressive anal squamous cell carcinoma which widely metastasized to lungs, liver, spine and heart. Anal SCC can be aggressive in HIV and HPV coinfected patients. We need research studies to see if early anal cancer screening is beneficial in these patients.

**Keywords** Anal squamous cell carcinoma, HIV, HPV

## 1. Introduction

Anal cell cancer (ACC) accounts for about 1.5% of all digestive system cancers in the United States with Squamous Cell Carcinoma (SCC) being the most common histological type (1). Over 90% of the patients present with loco-regional disease and less than 20% of the cases will have distant metastasis (2). Most common sites of metastasis are to the liver and lungs (3-4). As per our literature search, only 1 case of vertebral metastasis has been reported so far and there has been no reported case of cardiac metastasis. We discuss a case of 35 year old man with AIDS who was diagnosed with aggressive anal SCC who had vertebral and cardiac metastasis.

## 2. Case Report

A 35 year old African American man with 10 year old history of genital warts and recently diagnosed with AIDS and anal SCC presented with four days history of back pain and bilateral lower extremity weakness with decreased sensation. He was diagnosed with anal SCC 8 months prior to presentation and had loop colostomy, anal mass (Figure 1) resection including shaft of penis and had interrupted 5 Fluorouracil and Mitomycin based chemoradiation and radiation treatments. He was on antiretrovirals with undetected viral load. He was homosexual, nonsmoker and nonalcoholic with no history of illicit drug use.

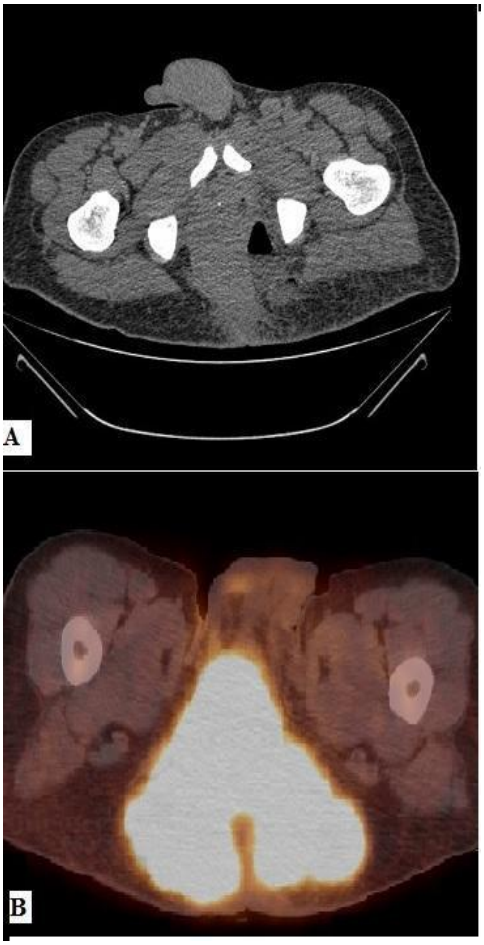


**Figure 1.** A-CT Pelvis with contrast showing perianal mass. B- PET CT of Primary anal tumor

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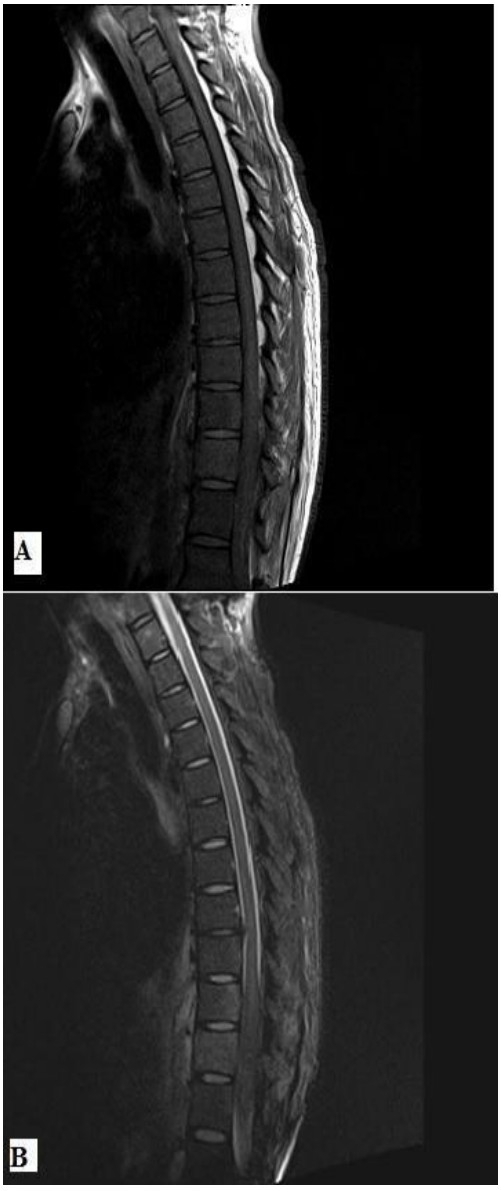


**Figure 2.** A & B: T1 and T2 weighted images of sagittal section of spinal cord showing metastases

He had stable vitals and his physical examination was significant for young , cachectic man, in distress due to pain, with absence of spinal tenderness, 2/5 strength in bilateral lower extremities and decreased deep tendon reflexes in ankle and both the knees, negative Babinski's sign, decreased sensation involving T11 to S1 dermatomes with intact perianal sensation. Blood work was significant for elevated LDH-417, normal alkaline phosphate, anemia with hemoglobin of 9.9mg/dl, Hematocrit of 30.1. TB quantiferon gold test was negative. Cultures including blood, urine, and sputum were negative.

MRI spine (Figure 2) showed metastatic osseous disease worse at the T11 level with extraosseous extension of the tumor within the anterior and posterior paraspinal musculature as well as extensive epidural spread of the tumor with severe cord compression worse at the T10-T11 level with mild associated cord signal abnormality. Further imaging studies showed extensive metastatic disease within the lungs (Figure 3), pleura, mediastinal and hilar nodes and liver with small pericardial effusion. Mediastinal lymphadenopathy was confirmed as anal SCC on biopsy. Echocardiogram showed normal left ventricle size and thickness with normal left ventricular systolic function and small pericardial effusion.

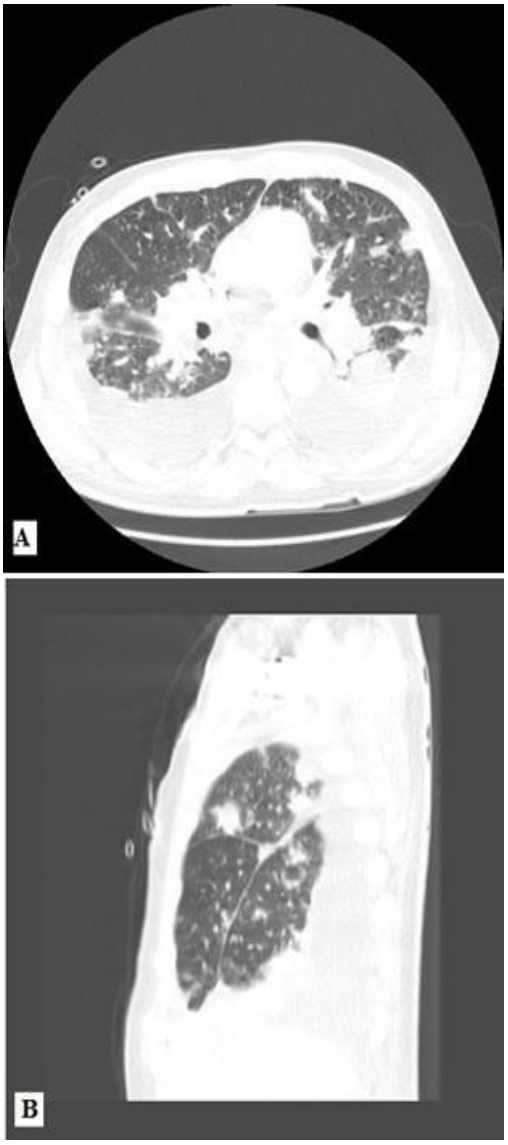


**Figure 3.** A & B: Lung findings showing lymphangiticcarcinomatosis, bilateral pleural effusions with pleural thickening-metastatic pleural disease

During his hospital stay, patient was commenced on radiation therapy and also received 2 cycles of chemotherapy. His condition continued to deteriorate and he went into respiratory failure from worsening bilateral pleural effusions. After a month of aggressive management including intensive care unit stay, patient died due to hypoxic respiratory failure. Autopsy findings (Figure 4) were consistent with most extensive metastatic disease identified within the lungs and liver parenchyma. Extensive yet small tumor emboli were present from small perforating intramyocardial branches of coronary arteries and also kidneys. The cause of death in this

patient was widely metastatic disease to lungs with respiratory failure.

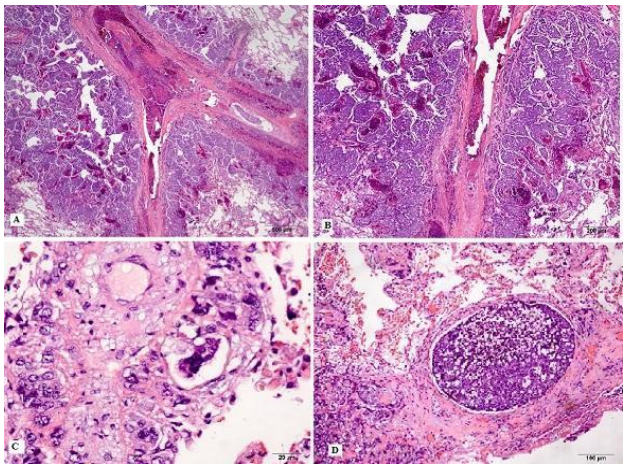

**Figure 4.** A-Low power view of lung with tumor involvement and intra-vascular tumor emboli. HE stain, 2x. B-Medium power view of lung with tumor involvement by metastatic squamous cell carcinoma. Benign lung is visible in the lower outer corner. HE stain, 4x. C- High power view of tumor embolus. HE stain, 40x. Seen in heart, lung and vertebrae. D-Medium power view of sub pleural metastasis. A large tumor embolus dominates the image. HE stain, 10x

## 3. Discussion

Anal cancer comprises principally of two major morphologic variants: squamous cell carcinoma (SCC) and adenocarcinoma. In most settings, SCC compromises more than 70% of cases. Anal SCC is strongly associated with human papilloma virus (HPV, types 16-18) infection with 90%, 100%, and 58% among women, homosexual men, and heterosexual men, respectively (5). HPV can cause premalignant anal squamous intraepithelial lesions (ASIL) which can be low grade (LSIL) or high grade (HSIL). Progression of ASIL to invasive carcinoma is affected by HIV status, HPV subtype and titers, CD 4 count (6).

Anal SCC usually spreads in a loco-regional manner within and outside the anal canal. Lymph node involvement at diagnosis is observed in 30-40% of cases while systemic spread is uncommon with distant extrapelvic metastases recorded in 5-8% at onset, and rates of metastatic progression after primary treatment between 10% and 20% (7). Metastasis occurs by lymphatic spread and local invasion into contiguous structures like rectum and bladder most of the time. Distant metastasis via hematogenous spread occurs in less than 2% cases (8). Hematogenous metastasis is very uncommon even in advanced stages of Anal SCC. Most common sites of distant metastasis when it occurs are to the liver or lungs. However, vertebral system may be involved in extremely rare situations via vertebral venous system (9). Only 1 case of vertebral metastasis (10) and no case cases of cardiac metastasis have been reported so far to the best of our knowledge.

Incidence of anal SCC in the general population has increased lately which has been attributed to changes in sexual practices, incidence of HIV and HPV. Patients with HIV are more likely to have HPV infection and the risk of HPV infection evolving to HSIL and invasive anal cancer is also greater among these patients. As HPV vaccination cannot be given in immunocompromised HIV patients for primary prevention, we need to start early screening in HPV and HIV coinfected patients for anal cancer by doing regular anal pap smears. In early diagnosed cancers, cure can be achieved with loco-regional control.

Our patient had genital warts for 10 years which progressed to aggressive anal carcinoma. Even with surgery and chemoradiation, the disease progressed to involve multiple organs causing fatal outcome. With this case, we want to highlight the importance of early detection of anal cancer in coinfected HIV and HPV patients.

## 4. Conclusions

Anal SCC can be aggressive in HIV and HPV coinfected patients. We need research studies to see if early anal cancer screening is beneficial in these patients.

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